UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,756	10/06/2003	Paul Adams	BIC-018	2833

29626 7590 03/17/2009
THE H.T. THAN LAW GROUP
WATERFRONT CENTER SUITE 560
1010 WISCONSIN AVENUE NW
WASHINGTON, DC 20007

EXAMINER	
HODGE, ROBERT W	
ART UNIT	PAPER NUMBER
1795	
MAIL DATE	DELIVERY MODE
03/17/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/679,756	Applicant(s) ADAMS ET AL.	
	Examiner ROBERT HODGE	**Art Unit** 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 11 February 2009.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,3,5-17 and 75-116 is/are pending in the application.

4a) Of the above claim(s) 79 and 100-111 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3,5-9,11-17,75-78,80-99 and 112-116 is/are rejected.

7)☒ Claim(s) 10 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/11/09.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/11/09 has been entered.

Response to Arguments

Applicant's arguments filed 2/11/09 have been fully considered but they are not persuasive. In the first section of applicants' remarks applicants continue to argue the restriction requirements that have been made **Final**. In brief clarification, the restriction requirement in the Non-Final office Action dated 5/19/06 was in response to claims filed 10/6/03. The restriction requirements filed later in prosecution were in response to the more than 40 newly added claims filed in the response dated 5/9/07 which introduced claims drawn to various species disclosed in the specification but not previously claimed which requires a burdensome search to search all of the various species in the claims and therefore in response to **applicants' amendment** the species restriction requirement was made. And as was already stated in the Final Office action dated 8/11/08, applicants did not properly traverse the species restriction requirement dated 11/8/07 because the traversal did not distinctly and specifically point out the supposed errors in the species restriction requirement dated 11/8/07. The arguments traversed a restriction requirement that had been withdrawn by the Examiner. Therefore the election is still treated as an election without traverse and the restriction requirement is still deemed proper and still remains **Final**.

Regarding the 112 first paragraph rejection, applicants are asking the Examiner not only to read limitation from the instant specification into the instant claims, which the Examiner cannot do, they are also asking the Examiner to read supposed implied limitations into their specification. Applicants state that a "person of ordinary skill in the art would readily understand that poppet valve, porous member, filler, foam, or the like are all references to a pressure differential device." However the supposed passage that provides the supposed support still does not provide support, no where in said passage is the term "pressure differential device" used and no where does it state that the above listed devices are considered "pressure differential devices". There is also no disclosure stating that any of the above listed devices cause the pressure differential, the only disclosure regarding the pressure differential states that "Due to the presence of hydrogen gas the pressure in reactant compartment 16 is higher than the pressure in fuel compartment 14 and movable wall 18 is pushed by this differential pressure". Furthermore in the sentence before which applicants have underlined in their remarks it states "Membrane 32 is selected so that a certain pressure differential across the membrane is necessary for hydrogen gas to migrate across the membrane". Neither of the two passage even come close to implying that the above listed structural items cause the pressure differential, the above two quoted passages state that the a pressure differential must be present for hydrogen gas to migrate across the membrane and that due to the presence of hydrogen gas this pressure differential is present. So as discussed in the instant specification a skilled artisan would understand that the hydrogen gas is under pressure which causes the pressure differential, the skilled artisan would not understand that a poppet valve, porous member, filler, or a foam cause the pressure differential. Therefore applicants are using a term that is broader than the scope of their instant specification and have therefore added new matter to the instant claims and the rejection will be maintained.

The Examiner acknowledges the declaration under 37 CFR 1.131 which is therefore entered into the file wrapper.

The remainder of applicant's arguments are directed towards the amendments to the claims which have been considered and will be addressed in the grounds of rejection below. It should also be noted that applicants are using open claim language and therefore more may be present in the prior art and still read on the claims such as multiple paths for supplying fuel to the fuel cell, and as long as one of those paths reads on the claimed invention the prior art rejection is proper. With regards to functional language applicants are directed to MPEP 2114 for further guidance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 76, 77, 82, 83, 92-99, 115 and 116 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The recitation of a "pressure differential device" is new matter. The Examiner can find no support in the instant specification for said device. The only disclosure that can be found is in paragraph [0043] regarding a pressure differential that is needed across the membrane but no "pressure differential device" can be found anywhere.

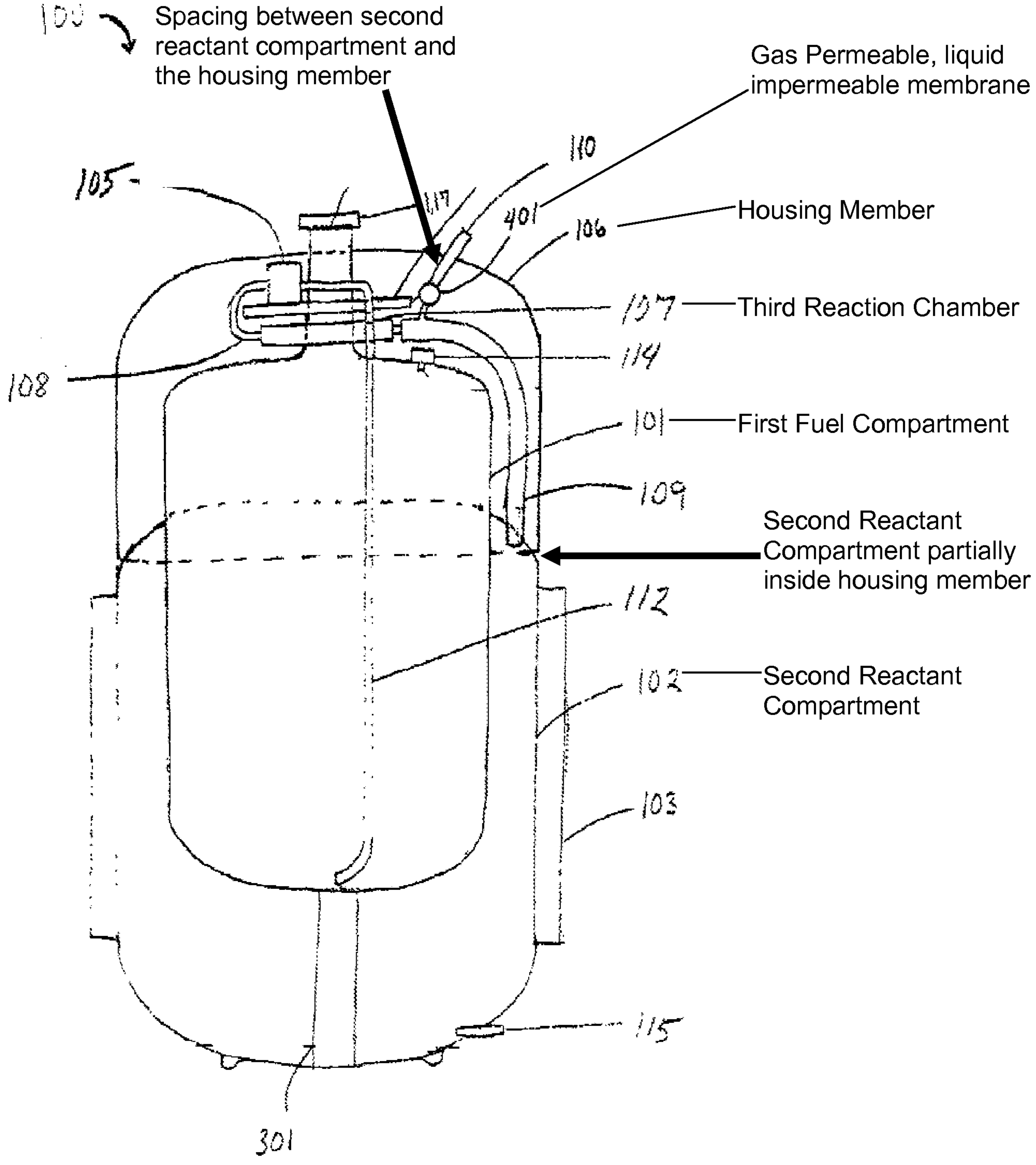
Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 92-99 and 112-116 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,932,847 hereinafter Amendola.

Regarding claims 92, 93, 112 and 114, as seen in figure 4, Amendola teaches a fuel supply comprising a first fuel compartment 101, a second reactant compartment 102 a third reaction chamber 107, and a gas permeable, liquid impermeable membrane 401 which is part of the second reactant compartment since it is in fluid communication with said compartment via 109 and allows hydrogen gas to pass out the outlet 110 (see also column 3, line 30 – column 4, line 61 and column 9, lines 46-59 and illustration below)

Figure 4


Spacing between second reactant compartment and the housing member
Gas Permeable, liquid impermeable membrane
Housing Member
Third Reaction Chamber
First Fuel Compartment
Second Reactant Compartment partially inside housing member
Second Reactant Compartment

Regarding claims 92, 94, 115 and 116; Amendola teaches a poppet valve (i.e. check valve) as part of the second reactant compartment, which is capable of causing a pressure differential because it will not open until a certain pressure is obtained (column 6, lines 25-40).

Regarding claims 95 and 96, Amendola teaches the first fuel compartment, the second reactant compartment and third reaction chamber are housed in an outer casing 106 (figure 4 and illustration above).

Regarding claim 97, Amendola teaches that the fuel container 101 has a flexible portion and as the volume of the second reactant chamber 102 increases the fuel container 101 decreases (column 3, line 59 - column 4, line 52).

Regarding claims 98 and 112, Amendola teaches a one-directional valve (i.e. check valve) from the first fuel compartment 101 to the third reaction chamber 107 (column 6, lines 41-64).

Regarding claims 99 and 113, Amendola teaches a pump 105 to transport fuel from the first compartment to the third reaction chamber (figure 4 and column 6, lines 8-25).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 7-9, 11, 13, 15-17, 75-78, 81-86 and 89-91are rejected under 35 U.S.C. 103(a) as being unpatentable over Amendola.

Amendola discloses the claimed invention except for a membrane disposed on a wall of the second reactant compartment. It would have been obvious to one having ordinary skill in the art at the time the invention was made to relocate the membrane of Amendola so that it is disposed on a wall of the second reactant compartment, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. Therefore the burden is shifted to applicants to prove in the form of evidence that the location of the membrane of the instant invention has unexpected results when compared to the closest prior art (i.e. Amendola).

Amendola as discussed above is incorporated herein.

Regarding claim 11, Amendola teaches the fuel is sodium borohydride (abstract).

Regarding claims 13 and 15, Amendola teaches the third reaction chamber comprises a catalyst that can be platinum or ruthenium (column 12, lines 47-67).

Regarding claims 16 and 17, Amendola teaches liners (i.e. containers 101 and 102) for the first fuel compartment and the second reactant compartment (figure 1 and column 4, lines 11 et seq.).

Claims 5, 6, 12, 87 and 88 rejected under 35 U.S.C. 103(a) as being unpatentable over Amendola as applied to claims 1 and 85 above, and further in view of US Pre-grant Publication No. 2003/0138679 hereinafter Prased.

Amendola does not teach that the outer housing is substantially impermeable to hydrogen or sodium borate as a liquid reactant.

Prased teaches a fuel supply 100 for a fuel cell 218, comprising an outer casing 112 impermeable to hydrogen that encases a fuel compartment 102 and an integral reactant compartment 192 (i.e. gas collection area) and a reaction chamber 182 (i.e. catalyst housing), with a gas permeable, liquid impermeable structure (paragraphs [0020], [0036], [0039] and [0041]), a valve 126, a pump 118, integrally formed walls, wherein the fuel is sodium borohydride, and a liquid reactant is sodium borate, the catalyst is ruthenium (paragraphs [0025]-[0027]) and a liner is present (i.e. plastics, paragraph [0026]) (see also abstract, figures 1-11 and paragraphs [0004]-[0041]). With respect to claim 7, Prased teaches a gas permeable, liquid impermeable wall may be used to divide the interior of the external housing 178 into two regions and separate the inlet and outlet openings 186 and 188 from the gas outlet 194 (paragraph [0041]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to us a material that is impermeable to hydrogen as well as using sodium borate to react with the sodium borohydride in Amendola as taught by Prased in order to provide a fuel cartridge that will not leak hydrogen thus preventing waste of the fuel being generated and to provide a reactant that will more efficiently produce hydrogen from sodium borohydride.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amendola in view of Applicants admitted prior art hereinafter AAPA.

Amendola as discussed above is incorporated herein.

Amendola does not teach that the fuel is methanol.

AAPA teaches that methanol is a common fuel used in various fuel cell applications.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include methanol as a fuel in Amendola as taught by AAPA in order to provide methanol as the fuel to take advantage of a well-known and readily available fuel used in the art.

Allowable Subject Matter

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The statement for indicating allowable subject matter can be found in the office action dated 9/7/06.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795